

Claims

What is claimed is:

1. A control node power system providing power redundancy to certain devices of a vehicle, comprising:

a primary power feed;

a secondary power feed;

a first set of relays for selectively providing power to at least one device of a first class; and

a second set of relays for selectively providing power to at least one device of a second class,

wherein under a normal operating state, said at least one first class device is selectively powered by said primary power feed by means of said first set of relays, and said at least one second class device is selectively powered by said primary power feed by means of said second set of relays, and upon disruption of said primary power feed, said at least one second class device is selectively powered by said secondary power feed by means of said second set of relays.

2. The system of claim 1, further comprising:

a first switch selectively connecting said second set of relays to said primary power feed; and

a second switch selectively connecting said second set of relays to said secondary power feed,

wherein said first switch is closed and said second switch is open while said system is operating in said normal operating state, and wherein said first switch is open and said second switch is closed upon disruption of said primary power feed.

3. The system of claim 2, wherein an operating state of said first and second switches is dependent upon a presence or absence of a disruption in said primary power feed.

4. The system of claim 3, wherein disruption in said primary power feed occurs when said primary power feed is placed in either a short-circuit state or in an open circuit state.

5. The system of claim 4, wherein said first switch connects said first set of relays to said second set of relays, and upon disruption of said primary power feed, said second set of relays are electrically isolated from said first set of relays.

6. The system of claim 1, wherein said at least one first class device represents at least one component of a vehicle considered unimportant for a safe operation of the vehicle, and said at least one second class device represents at least one component of the vehicle considered important for the safe operation of the vehicle.

7. The system of claim 1 wherein said at least one first class device comprises at least one device rated as either a vehicle Class A device or vehicle Class B device, while

said at least one second class device comprises at least one device rated as a vehicle class C device.

8. The system of claim 1, further comprising a processor that selectively operates said first set of relays and said second set of relays so as to selectively activate said at least one first class device and said at least one second class device, respectively.

9. The system of claim 8, wherein said processor receives power from either said primary power feed through a first diode, or from said secondary power feed through a second diode, said first diode configured to isolate said secondary power feed from said primary power feed and said second diode configured to isolate said primary power feed from said secondary power feed.

10. The system of claim 9, further comprising a regulator that regulates an amount of power received by said processor from either said primary power feed or said secondary power feed.

11. The system of claim 2, wherein said first and second switches comprise transistors.

12. A power distribution node of a vehicle, comprising:
a primary power feed supplying power to the node;
a secondary power feed supplying power to the node:

a first set of relays for selectively distributing power from said primary power feed to at least one first class device of the vehicle;

a second set of relays for selectively distributing power from one of said primary power feed and secondary power feed to at least one second class device of the vehicle;

a first switch selectively connecting said second set of relays to said first set of relays, with said first and second set of relays placed in series with one another, with respect to said primary power feed, when said first switch is in a closed state; and

a second switch selectively connecting said second set of relays to said secondary power feed.

13. The power distribution node according to claim 12, wherein said first switch is placed in a closed state and said second switch is placed in an open state when the power distribution node is operating normally, thereby allowing said first set of relays and said second set of relays to distribute power from said primary power feed to said at least one first class device and said at least one second class device, respectively, and upon said primary power feed being disrupted, the power distribution node is placed in an emergency operating state that leads to said first switch being placed in an open state while said second switch is placed in a closed state, thereby isolating said second set of relays from said primary power feed, and allowing said second set of relays to distribute power from said secondary power feed to said at least one second class device.

14. The power distribution node of claim 12, wherein said at least one first class device is unimportant to a safe operation of the vehicle, while said at least one second class device is important to the safe operation of the vehicle.

15. The power distribution node of claim 12, wherein said at least one first class device is one of a vehicle class A device or vehicle class B device, while said at least one second class device is a vehicle class C device.

16. The power distribution node of claim 12, wherein said first and second switches comprises transistors.

17. The power distribution node of claim 16, wherein said second switch comprises one transistor, with a gate of said transistor connected to said primary power feed, so that a voltage generated by said primary power feed and applied to said gate controls an operating state of said transistor.

18. The power distribution node of claim 16, wherein said first switch comprises first, second and third transistors, said first transistor configured to selectively connect said second set of relays in series with said first set of relays, and said second and third transistors configured to selectively activate said first transistor based upon a presence or absence of a disruption in said primary power feed.

19. The power distribution node of claim 18, wherein when said primary power feed is functioning normally, one of said second and third transistors is in an off-state while another of said second and third transistors is in an on-state.

20. The power distribution node of claim 12, further comprising a processor that selectively operates said first set of relays and said second set of relays so as to selectively activate said at least one first class device and said at least one second class device, respectively.

21. The power distribution node of claim 20, wherein said processor is capable of being powered by either said primary power feed through a first diode, or by said secondary power feed through a second diode, said first and second diodes configured to isolate said primary and secondary power feeds from one another.

22. A method of providing power to a vehicle device, comprising the steps of:
selectively providing power to a plurality of vehicle devices by means of a power distribution control node, said power being derived from a primary power feed;
isolating a first class of devices from said primary power feed upon an occurrence of a disruption in said primary power feed; and
selectively providing power to said first class of devices by means of said power distribution control node, said power being derived from a secondary power feed,
wherein said first class of devices comprise those vehicle devices whose functions are considered important toward safely maintaining operation of the vehicle.

23. The method according to claim 22, wherein a processor associated with said power distribution control node controls the selective provisioning of power to said plurality of vehicle devices.

24. The method according to claim 23, further comprising the step of providing power to said processor from one of said primary power feed and secondary power feed, whereupon disruption of said power feed that is currently supplying power to said processor results in said processor being powered by said power feed that has not been disrupted.

25. A power distribution node, comprising:
a first power feed configured to supply power to the node;
a second power feed configured to supply power to the node;
a first power distribution means for distributing power from said first power feed to a first set of load devices;
a second power distribution means for distributing power from said first power feed to a second set of load devices and for distributing power from said second power feed to said second set of load devices;
a means for selectively isolating said second power distribution means from said first power feed; and
a means for selectively connecting said second power distribution means to said second power feed.